More Review Questions

1. True or False?
2. Blue light is longer wavelength than Red Light
3. X-rays travel faster than radio waves
4. Infra red radiation causes molecules to vibrate and rotate
5. Radio waves cause electrons to jump up a shell
6. A light wave of wavelength 450nm has a frequency of 220GHz.
7. A higher frequency light wave has a longer wavelength.
8. A photon has mass
9. A photon has momentum
10. A photon has an associated wavelength
11. A photon has energy
12. An electron has mass
13. A moving electron has momentum
14. A moving electron has an associated wavelength
15. A clock that goes by me at relativistic speed (i.e. close to the speed of light) will appear to tick slower.
16. Who am I?
17. I performed an experiment that was supposed to detect the “ether wind”.
18. I proposed that mass and energy are equivalent
19. I proposed that light has momentum
20. I proposed that light is composed of particles of energy
21. I proposed that matter has an associated wavelength
22. I theorized the existence of electromagnetic waves that travel at 3.0x108m/s
23. Zinc has a work function of 4.33eV and copper has a work function of 4.70eV. True or False:
24. Zinc binds its electrons more tightly than copper.
25. It takes 4.33eV of energy to remove an electron from a zinc atom.
26. It takes more energy to remove an electron from a copper atom than a zinc atom.
27. A photon of frequency 2.5x1015Hz will not have enough energy to eject an electron from either atom.
28. a) Give the momentum of a light photon of wavelength 660nm. What colour is this?
29. Give the momentum of a light photon of wavelength 210nm. What “colour” is this?
30. Which one has greater momentum?
31. Find the deBroglie wavelength of a particle of mass 7.3x10-18kg traveling at 1.4x106m/s.
32. A wave will noticeably diffract if it passes through an opening that is comparable to its wavelength. Will the particle in #5 diffract through a pinhole 0.1mm in diameter?
33. A photon of frequency 2.5x1016 Hz strikes a stationary electron. The electron recoils backwards with a speed of 2.5x105m/s and emits a photon.
34. Find the momentum of the incoming photon.
35. Find the momentum of the outgoing electron.
36. Find the momentum of the emitted photon.
37. FInd the wavelength of the emitted photon.